CURRENT STATUS OF IMS DEPLOYMENT STRATEGIES & FUTURE DEVELOPMENTS

02 APRIL 2012

CONTENTS

› IMS today

› Ericsson IMS Experience

› Deployment Strategies

› Future Developments

ERICSSON

IMS – PART OF IMT

› IMT is global standard for 3G networks today

› Result of the collaboration of different standards bodies

› 3GPP and 3GPP2 involved in IMT-2000 work

› IMS originally defined by an industry forum called 3G.IP and brought to the 3GPP; and was seen as suitable basis for IP next generation service framework

A BRIEF HISTORY

› IMS first appeared in mainstream standards in 3GPP Release 5 when SIP-based multimedia was added

› 3GGP2 based their CDMA 2000 multimedia domain on the 3GPP IMS and added support for CDMA

› 3GPP Release 6 added interworking support with WLAN

› 3GPP Release 7 added support for fixed networks by working together with TISPAN

› Release 8 added support for LTE/SAE, multimedia session continuity, enhanced emergency sessions and IMS centralized services

› Release 9 added support for emergency calls over GPRS and EPS, enhancements to multimedia telephony, media plane security, service centralization and continuity

› Release 10 added support for inter device transfer, enhancements to SRVCC and to IMS emergency sessions

› Release 11 adds network provided location information for IMS

A BRIEF HISTORY

ERICSSON

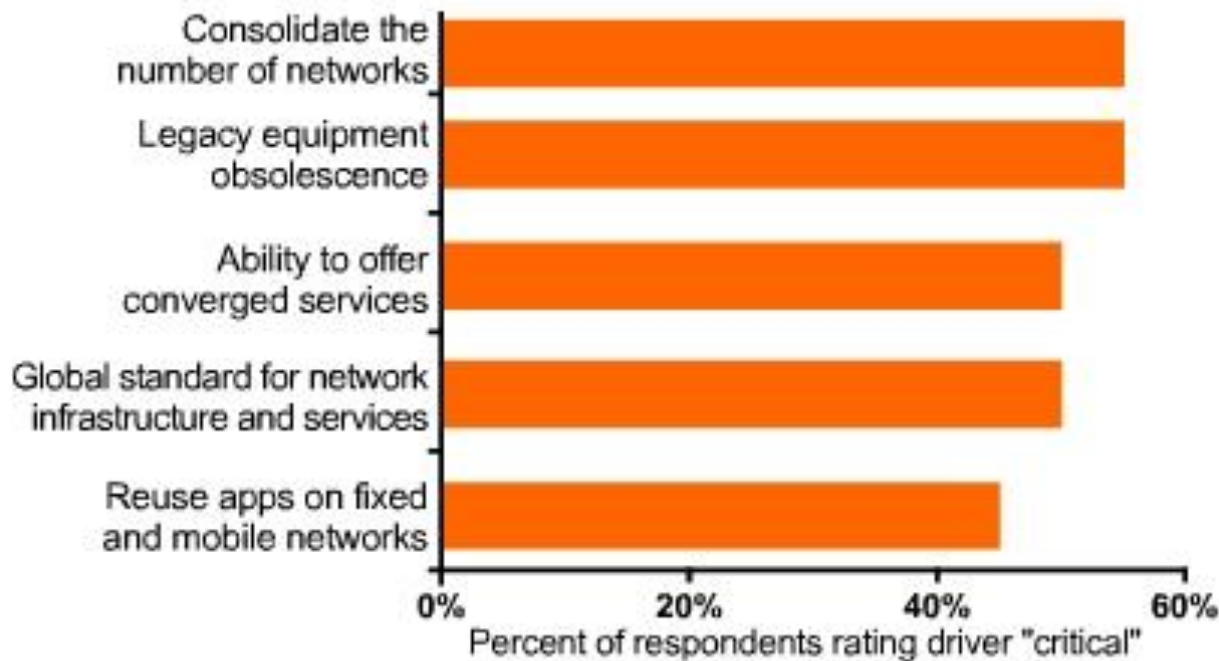| Version	Released	Highlights
Release 99	Q1 2000	Specified the first UMTS 3G networks, incorporating a CDMA air interface
Release 4	Q2 2001	Originally called the Release 200; added features including an all-IP core network
Release 5	Q1 2002	Introduced SIP based multimedia in IMS framework as well as HSDPA
Release 6	Q4 2004	Interworking with WLAN and adds HSUPA, and enhancements to IMS such as PoC and GAN
Release 7	Q4 2007	Support for fixed networks by working together with TISPAN; also focus on decreasing latency, improvements to QoS for real-time applications; this release also included work on NFC and HSPA+
Release 8	Q4 2008	First LTE release; All-IP network. Also included multimedia session continuity, enhanced emergency sessions and IMS centralized services
Release 9	Q4 2009	SAE Enhancements: WiManax and LTE/UMTS Interoperability.
Release 10	Q1 2011	LTE Advanced; inter device transfer; enhancements to SRVCC and IMS emergency sessions
Release 11	Planned to Q3 2012	Advanced IP interconnection of services; service layer interconnection between national operators/carriers as well as third party application providers

IMS PRE-2010

ERICSSON

A decade since IMS architecture appeared in standards it is still not as widespread as originally envisaged; some of the reasons are:

› IMS required a significant reworking of the network
› Operators had no reason to replace the CS networks that were working well and generating revenues even though IMS promised greater efficiency
› Operators struggled with the new business model(s) they would have to implement with IMS
› Lack of new compelling services – all IMS services can be replicated with "quick internet solutions"
› Lack of mobile IMS terminals
› A wait and see attitude amongst operators
› Large investment for IMS network not justifiable according to some operators

WHY OPERATORS DEPLOYED IMS

ERICSSON

Top 5 business drivers for deploying IMS

Business driver	
Consolidate the number of networks	~55%
Legacy equipment obsolescence	~55%
Ability to offer converged services	~50%
Global standard for network infrastructure and services	~50%
Reuse apps on fixed and mobile networks	~45%

Percent of respondents rating driver "critical"

© Infonetics Research, *IMS Services Strategies: Global Service Provider Survey*, June 2010

IMS TODAY
OPERATORS' PERCEPTION

ERICSSON

› With the consensus reached by GSMA adopting One Voice initiative in Feb 2010 that IMS is the way to provide voice over LTE networks; IMS is quickly gaining momentum and making its way to forefront of operators' plans once more

› IMS no longer just being considered by fixed operators but mobile operators are coming on board as well

› Vendors solutions and standards are more mature than they were a few years ago and therefore networks are more stable

› Surveys have shown that many operators who were against IMS have changed their minds

› The focus has moved on from whether to not to deploy IMS, rather the focus is now to set out and implement a robust IMS-enabled service road-map focused on keeping the operator relevant to customers as their primary communication service provider.

IMS FOR VOLTE

ERICSSON

› IMS identified as the industry preferred solution for VoLTE

› LTE has given new life to the IMS architecture; new interest in IMS from mobile operators as they plan evolution to LTE

› IMS standard guarantees interoperability with other operators and legacy systems as well as continuity of known telecommunication services like roaming, charging

› IMS also brings new possibilities to assist competition with OTT players; operators can be more than just bit pipe providers

ERICSSON AND IMS

› Ericsson launched the world's first commercial IMS network in 2005 in Telefonica Spain

› As of May 2011 Ericsson had delivered 54 IMS networks into commercial operation, making Ericsson a widely experienced player in the IMS domain.

› Today there are 63 commercial Ericsson IMS networks in operation in the world

All cited IMS references include Ericsson CSCF and HSS and at least one application server.

ERICSSON IMS DEPLOYMENTS

ERICSSON

#Live networks
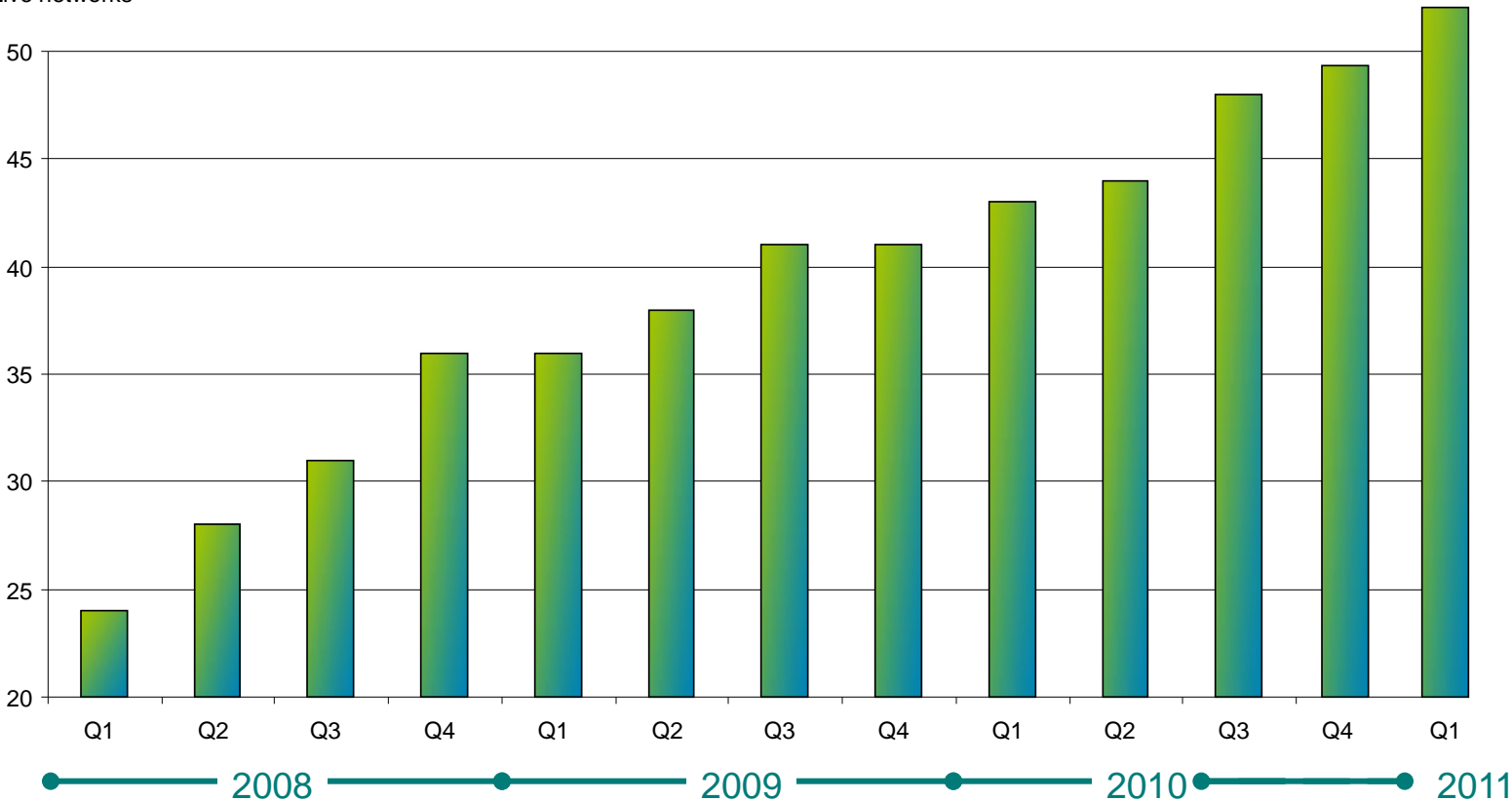
ONE NEW OPERATOR GOING LIVE
EACH MONTH

94 COMMERCIAL CONTRACTS WORLDWIDE

63 COMMERCIAL IMS SYSTEMS

- › T-Com Croatia
- › Superonline
- › Hellas on Line
- › Cyta
- › Telefonica
- › TDC
- › Elion
- › Meditel
- › Sprint
- › Vodafone Portugal
- › Beijing Netcom (CNC)
- › FarEasTone
- › Vodafone Czech Republic
- › Mobistar
- › Vipnet
- › TIM
- › Optimus
- › Mobilkom Austria
- › Tele Greenland
- › Vodafone Iceland
- › Invitel, Hungary
- › Swisscom

ERICSSON IMS EXPERIENCE

› Operators reasons for deploying IMS differ widely

- Desire to offer new multimedia services to compete with OTT players and become more than just a bit pipe provider
- PSTN replacement as networks age and become prohibitively expensive to maintain
- Reduce subscriber churn
- PBX hosting towards lucrative enterprise segment
- Possibility to create operator own service with local flavor
- Relatively simple introduction of new services once IMS core is in place

MEDITEL MOROCCO

› Second largest operator with both mobile and fixed license

› IMS solution focused on the enterprise segment

› Launched IP Centrex over WiMax access in 2006

› Added on Business Trunking solution in 2011

› Engagement ongoing to upgrade existing IMS core to latest version

ERICSSON IMS IN SUB-SAHARAN AFRICA

› Three IMS networks in the region
  − MTN Rwanda MMTel 2.0
  − MTN SA trial for several applications (testing for call center ongoing)
  − 21st Century Technologies Nigeria MMTel 2.0 (2008)

› Several ongoing engagements with numerous operators in the region

All IMS deployments include CSCF, HSS and at least one application server.

MTN RWANDACELL

› Operator was seeking solution to offer more than just voice to subscriber base (both fixed and mobile)

› Access networks WiMax, WiFi, fibre optic, GPRS/3G data, MTN Rwandacell intranet

› Multimedia applications on IMS available to both fixed and mobile subscribers with converged charging was attractive solution

› IMS core and MMTel application was deployed in MTN Rwanda; IP Centrex application from Broadsoft was later installed and integrated to Ericsson IMS core

› MTN Rwanda Experience
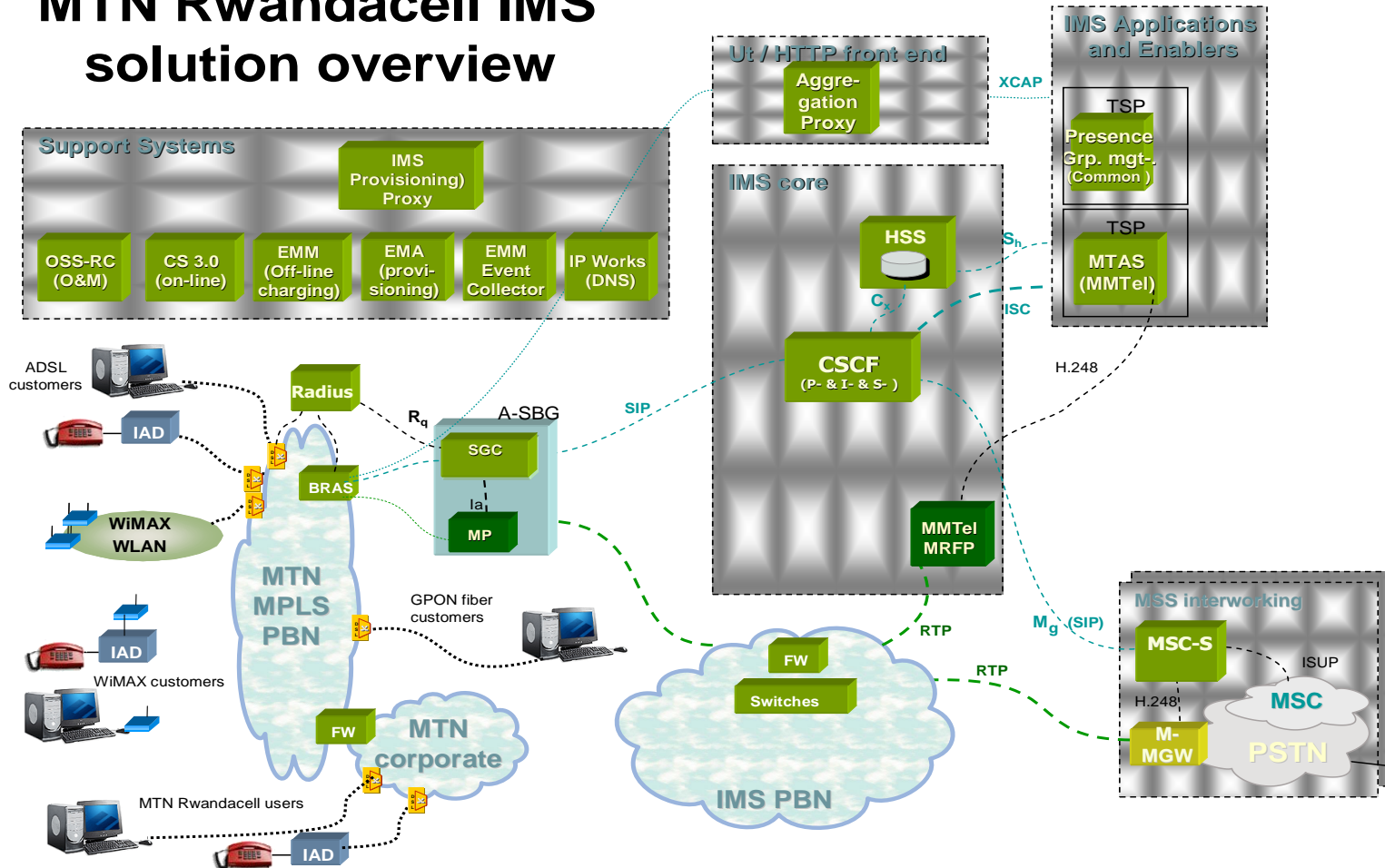
IP CENTREX FOR MTN

› Services included:
  − Business Telephony features and functionality (e.g., call forward, voice mail, instant conferencing, etc.)
  − Integrated Call Center, Conferencing and Messaging functionality
  − Built-In Video Telephony and Video Business Services using Multimedia IP Centrex Multimedia Functions
  − Integration with Enterprise Applications like CRM, ERP, and vertical apps
  − Clear Channels for IP PBX
  − Integrated IP CENTREX with Charging System 5.0

› Target market for IP CENTREX:
  − SOHO
  − Small, medium, and large corporations

› Benefits of IP CENTREX:
  − Simplicity of the integration & operation
  − New revenue stream
  − Future proof investment, 100% support of convergent network
  − Improve customer retention
  − Compliance with telecom standards

CHALLENGES

› Integration with charging system, customizations on billing system required

› Meeting customer expectations as they wanted richer functionality, comparing IMS with applications like SKYPE, Yahoo Messenger, and Google Talk, etc.

› limited coverage for fixed broadband

› Compatibility with available terminal devices

› skilled support availability

IMS DEPLOYMENT STRATEGIES

› Crucial to get buy in from major stakeholders at operator; understanding of IMS essential

› Business case developed for operator

› IMS represents new environment that will have impact on every aspect of operators business

› Departments such as marketing, operations and network planning need to be involved early on

› Competence planning is essential; someone needs to run network once installed; managed services is a valid plan

› Sound marketing plan crucial for IMS services to be adopted by subscriber base

› Migration plan has to be put in place to migrate subscribers to new platform

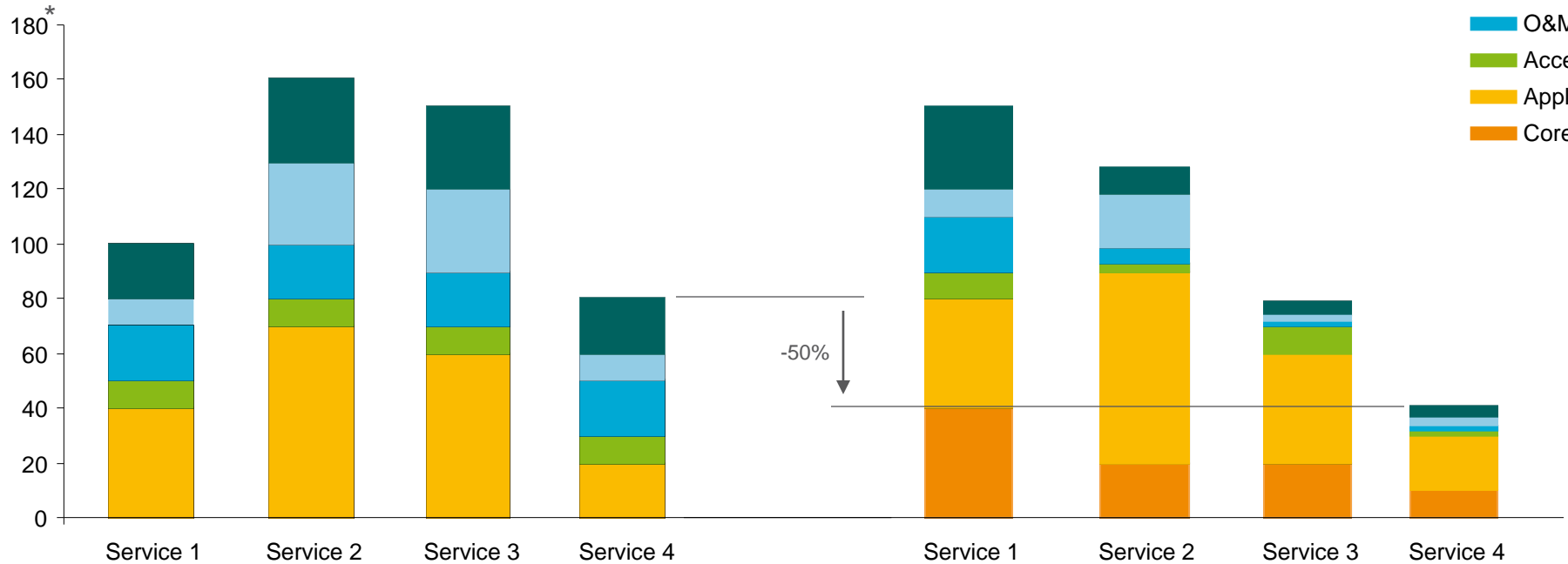› Deployment strategies for fixed operators will differ from mobile operators

CAPEX COMPARISON
VERTICAL VS IMS

VERTICAL SERVICES

IMS SERVICES

Legend:
- Integration
- BSS
- O&M
- Access
- Application
- Core

-50%

The fourth service brings very little extra integration work and O&M cost. Significantly lower cost per user

Service 1: VoIP over fixed BB
Service 2: Centrex for fixed BB
Service 3: Mobile centrex
Service 4: Presence

* Vertical Service 1 = 100

FIXED OPERATOR PAIN POINTS

How do we **protect** our voice revenue?

How and when do we **phase out** the TDM network?

How do we secure a **return of investment**?

How do we achieve a **TCO reduction**?

How do we best capture and **grow value**?

How do we handle our **enterprise** customers?

NEED FOR A HOLISTIC APPROACH

Business

- From Voice to Communication centric
- New Business opportunities
- Defend and grow
- New multimedia services possible

Operations

- Converging fixed & mobile operations
- Customer-oriented organisation
- Zero-touch & flow through operation
- Not owning & operating network
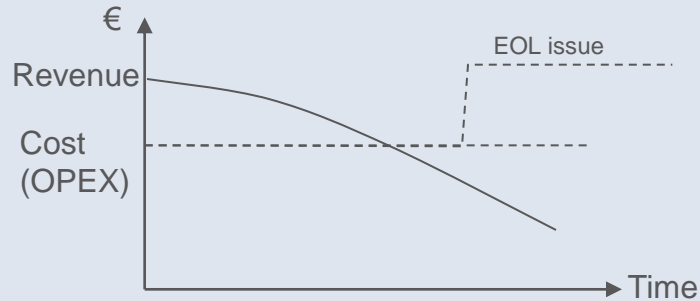- Align IT support environment

Network

- From legacy stovepipes to Convergent All-IP networks
- 100 x today's capacity
- Phase out of legacy network

STRATEGY OF TRANSFORMING NETWORKS
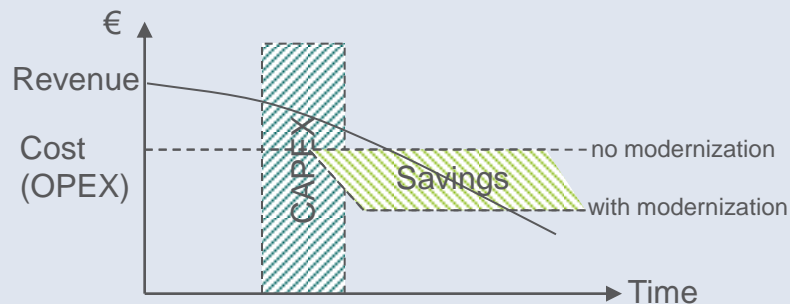## IMS FOR WIRELINE OPERATORS

PSTN

Traditional PSTN business model near end of life
- Price competition and churn cause revenue drop
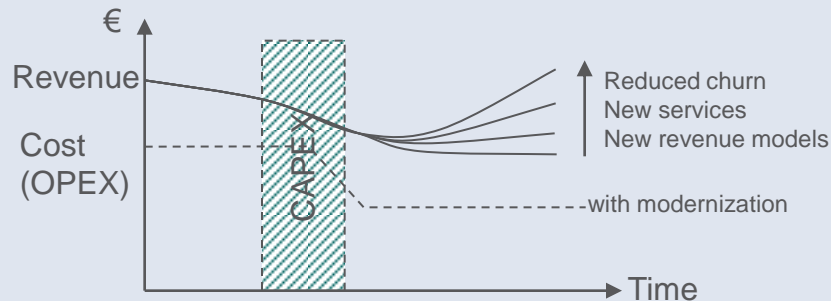- Costs stay flat or increase (switch EOL)

Softswitch

Narrowband modernization
- Investment (CAPEX area) causes drop in OPEX, business case is good if - over time – savings exceed CAPEX; however:
- Business is still not healthy if revenue falls below new lower cost line
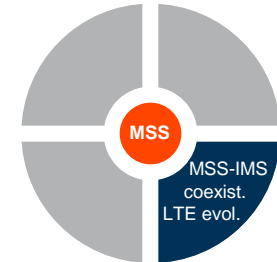- Softswitch going EoL causes OPEX increase

IMS

Broadband modernization
- Offer dual/triple/quadruple play, reducing churn, increasing revenue
- Offer new services
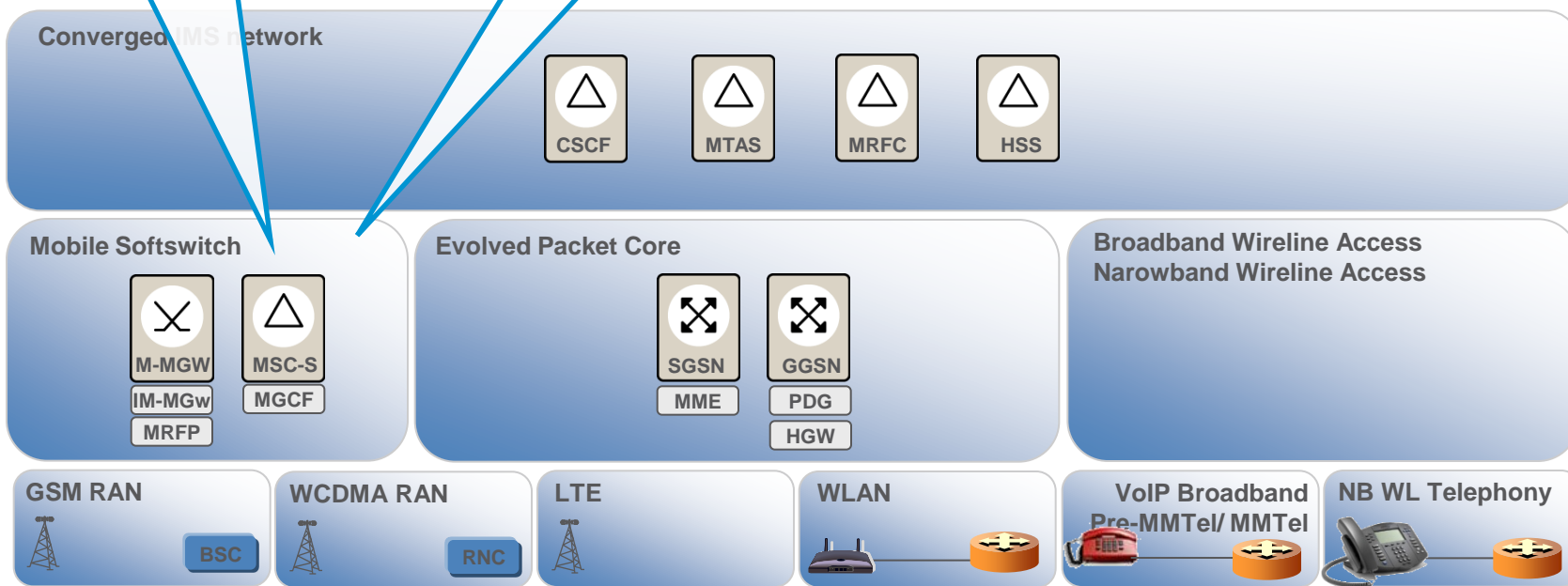- Invent new revenue models, add new revenue streams

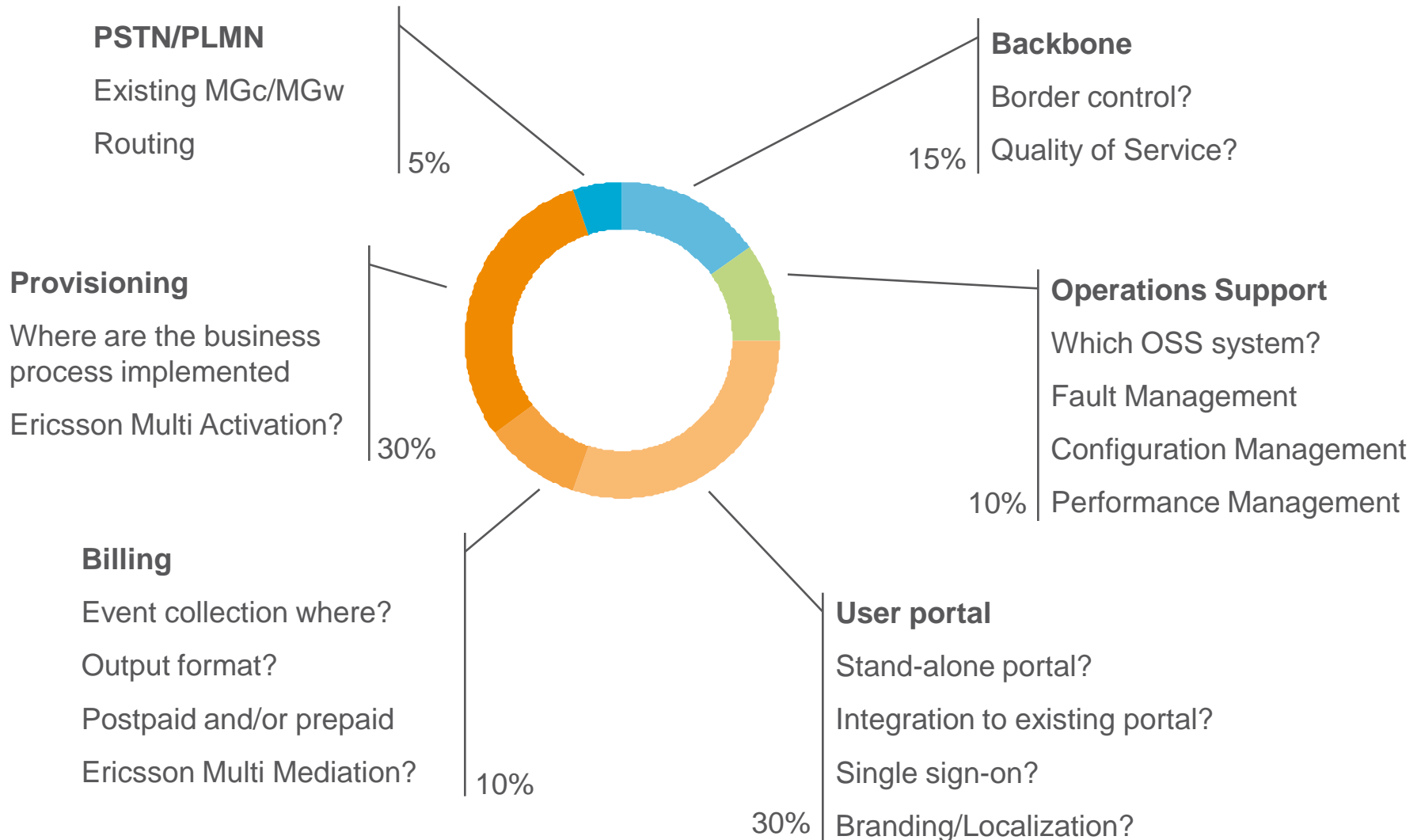# STRATEGY OF TRANSFORMING NETWORKS
IMS FOR MOBILE OPERATORS

MSS

MSS-IMS coexist. LTE evol.

Leverage on installed MSS base

Seamless access to IMS services

Converged IMS network

| △ CSCF | △ MTAS | △ MRFC | △ HSS |

Mobile Softswitch

⊠ M-MGW △ MSC-S
IM-MGw MGCF
MRFP

Evolved Packet Core

⊠ SGSN ⊠ GGSN
MME PDG
HGW

Broadband Wireline Access
Narowband Wireline Access

| GSM RAN | WCDMA RAN | LTE | WLAN | VoIP Broadband Pre-MMTel/ MMTel | NB WL Telephony |
| BSC | RNC | | | | |

Support access agnostic subscriber mobility

SYSTEMS INTEGRATION ELEMENTS

PSTN/PLMN

Existing MGc/MGw

Routing

5%

Backbone

Border control?

Quality of Service?

15%

Provisioning

Where are the business process implemented

Ericsson Multi Activation?

30%

Operations Support

Which OSS system?

Fault Management

Configuration Management

Performance Management

10%

Billing

Event collection where?

Output format?

Postpaid and/or prepaid

Ericsson Multi Mediation?

10%

User portal

Stand-alone portal?

Integration to existing portal?

Single sign-on?

Branding/Localization?

30%

BUSINESS COMMUNICATION

Business Voice - IPCentrex
Improved team responsiveness
› Business telephony features for small & medium companies

Collaboration
Communication efficiency
› Presence, Calendar, Office Directory
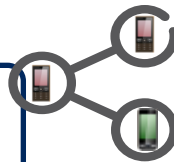› Presence, Messaging, File Sharing

Conferencing
Team Collaboration
› Web Conferencing
› Audio Conferencing with dial in
› Data sharing and collaboration tools

Mobility – Mobile VPN
Deliver IMS services to CS mobiles
• Routing of mobile call via IMS domain and IMS application
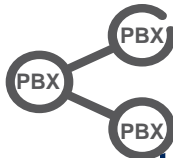• Roaming support

Connect PBX
Extends PBX features to mobiles
› Manages cost & functionality of mobile phones
› Compatible with a wide range of PBX systems

Visual Communication
› High quality video conferencing
› Room and desktop based

Business Trunking
Connection of company PBX
› Provides PBX trunks for external (off-net calls) traffic: **convergence**
› ISDN (PRI) migration into full IP (with continuation of existing subscription model & terms)

New service creation
› Re-creation of business critical legacy service and development of customer specific adaptations

RICH COMMUNICATION SUITE

END-USER VALUES

› Easy, simple and fun text/voice/video communication

› Enriched address book with photos and taglines, always up-to-date by on-line sync

› The promise of RCS –
one global community, reach all friends no matter what operator or device they use

"I want to interact and communicate easily with my close friends no matter where I am or what device I use"

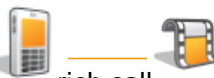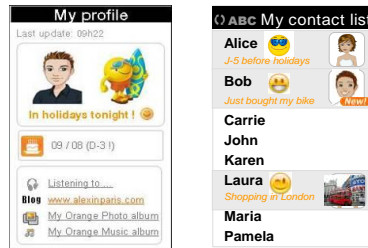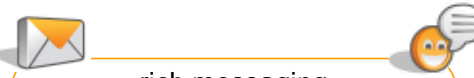› *"I want to share my everyday experience with my friends"*
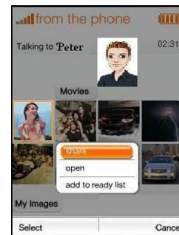
RCS FEATURES

RCS, a (r)evolution of mobile communication services focusing on user experience

rich addressbook
reinforce social links

rich call
share content

rich messaging
enjoy conversational messaging experience

presence ▸ history ▸ capability ▸ call ▸ multimedia sharing ▸ multimedia sending ▸ enhanced messaging

customer value proposal

- personalize his own profile and share it with best friends
- share content and emotion in live
- benefit from a conversational messaging

RICH COMMUNICATION SUITE OPERATOR VALUES

More than 100 members, and growing...

› RCS keeps the operator in pole position to deliver communication services and fights service churn to Internet communication alternatives

› RCS secures the evolution of the operator communication and multimedia offering for any device

› RCS builds on operator cooperation for new communication services for the existing 4B+ large global user community

ERICSSON RCS EVOLUTION

ENRICHED USER EXPERIENCE

RCS 4.0 - Commercial
- Selected RCS R4 compliance
- Candidates:
- APIs for developers
- Social NW integration
- RCS & VoLTE (IR.92) alignments for broadband connected devices and for RCS over LTE
- Network media store & forward
- Active Address Book
- RCS for Business Com
- Messaging enhancements
- Web access to RCS services

RCS 3.0 - Commercial
Aligned with GSMA RCS R2 & part of R3
- One-number multiple device support with mobile as primary device and broadband as secondary, and single device support for mobile and broadband
- One-number & multi-device support
- RCS services on both mobile and broadband connected devices:
  - VoIP (broadband only)
  - VideoShare/Imageshare
  - SMS / MMS (only on mobile) / Chat / Group Chat / File Transfer
  - Presence enhanced with Location and favourite link with label
  - Address book backup/restore, synchronization of address book between mobile & broadband device
- Handsets/clients from major phone vendors and 3PP suppliers validated with solution

RCS 2.5 - For Trials
- Aligned with GSMA RCS R2/R3
- One-number & multi-device support
- Same services as on the mobile on a PC or other broadband device:
  - VoIP/VideoShare/ImageShare
  - SMS/Chat
  - Presence
- End-to-end solution including demo/trial devices
- Based on ICS 5.0

RCS 2.0 - Commercial
- Full GSMA RCS R2 support for mobíle devices
  - Group Chat
  - VideoShare support
  - See who can be invited for presence
- Address book backup/restore
- End-to-end solution including demo/trial devices
- Handsets/clients from major phone vendors and 3PP suppliers validated with solution
- Based on ICS4.1 / ICS 5.0

| 2009 | trial 2009 | 2010 | 2012 |

** Ericsson RCS 2.0 is aligned to December 2008 version of the GSMA RCS R1 specification. Will be updated to support mobile RCS R2 part via maintenance.

ERICSSON RCS EVOLUTION

RCS 3.0

Aligned GSMA RCS R2 & part of R3

- One-number multiple device support with mobile as primary device and broadband as secondary
- Mobile & Broadband connected device
  - VideoShare/ImageShare
  - SMS, MMS (only mobile), chat, group chat, file transfer
  - Receive SMS on BA devices
  - Presence enhanced with location and favorite link with label
- Network solution aligned for RCS over LTE (GSMA IR92 2.0)
- Handsets/clients from major phone vendors & 3PP suppliers validated

RCS 3.1

Network solution for RCS-e v1.2

- Aligned with RCS R3
- Messaging enhancements for RCS-e
  - Store/foreword
  - Notifications

RCS 4.0

Network solution aligned with the GSMA RCE/RCS evolution

- Capability discovery Manager for Multi device Support
- Aligned with VoLTE IR.92 4.0
  - Use of VoLTE as voice component in RCS
  - Support for IMS APN and RCS when VoLTE is used
  - Support RCS and VoLTE interconnect and roaming.

CSR

KU

KU

2010

| Q1 | Q2 | Q3 | Q4 |

2011

| Q1 | Q2 | Q3 | Q4 |

2012

| Q1 | Q2 | Q3 | Q4 |

Available   Indicative   Candidate

KU = Knowlege Update